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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,274	08/04/2006	Heinz Von Der Kammer	37998-237338	5018

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EXAMINER	
CHERNYSHEV, OLGA N	
ART UNIT	PAPER NUMBER
1649	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,274	VON DER KAMMER ET AL.	
	Examiner	Art Unit	
	Olga N. Chernyshev	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *1-6,9-16 and 19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,8,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/27/7*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group VII in the reply filed on December 01, 2008 is acknowledged.

Claims 1-6, 9-16 and 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 01, 2008.

Claims 7, 8, 17 and 18 are under examination in the instant office action.

Sequence compliance

2. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. § 1.821 (a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 C.F.R. § 1.821 through 1.825. Specifically, no sequence identification has been provided for the nucleic acid sequences presented at pp. 37-38 of the instant specification. In case these sequences are new, Applicant needs to provide a substitute computer readable form (CRF) copy of a "Sequence Listing" which includes all of the sequences that are present in the instant application and encompassed by these rules, a substitute paper copy of that "Sequence Listing", an amendment directing the entry of that paper copy into the specification, and a statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. § 1.821 (e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d). The instant specification will also need to be amended so that it complies with 37 C.F.R. § 1.821(d)

which requires a reference to a particular sequence identifier (SEQ ID NO:) be made in the specification and claims wherever a reference is made to that sequence. See M.P.E.P. 2422.04.

3. The text of the instant specification, including claims, is not in compliance with the requirements for Sequence Identifiers (see MPEP 2422.03). The appropriate format for sequence identifiers is SEQ ID NO: X, wherein "X" is the sequence number. Appropriate correction is required.

Specification

4. The disclosure is objected to because of the following informalities:

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code, see p. 7. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7, 8, 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 7, 8 and 18 are vague and indefinite in so far as they employ the term "KCNE4" as a limitation. This term is appears to be novel, and without a reference to a precise

amino acid sequence identified by a proper SEQ ID NO: one cannot determine the metes and bounds of "KCNE4, or a fragment, or derivative, or variant thereof". Moreover, because the instant specification does not identify that property or combination of properties which is unique to and, therefore, definitive of a "KCNE4", an artisan cannot determine if a compound which meets all of the other limitations of a claim would then be included or excluded from the claimed subject matter by the presence of this limitation.

8. Claim 7 is further vague and indefinite in part (a) for recitation "administering a test compound to a test animal [...] in respect of the substances recited in [...]", which does not make sense. Clarification of the claimed subject matter is required.

9. Claim 8 is vague and ambiguous for reciting limitation "recombinant animal which expresses KCNE4". The metes and bounds of the limitation cannot be determined from the claim or he instant specification as filed.

10. Claim 17 is indefinite for being dependent from the indefinite claim.

Claim Rejections - 35 USC § 101

11. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

12. Claims 7, 8, 17 and 18 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial credible asserted utility or a well-established utility.

The instant claims are drawn to a method of screening for a modulator of neurodegenerative diseases or related diseases or disorders intended for use in clinical purposes

to prevent, treat or ameliorate such diseases or disorders. The specification discloses structure of KCNE4 protein of SEQ ID NO: 1, which is a naturally occurring protein known under names MIRP3 (p. 3 of the instant specification) or DRPCS (document BD of IDS submitted on 4/27/07). The specification further states that, "[t]he present invention is based on the detection and dysregulated, differential expression of a gene coding for a minimum potassium ion channel-related peptide 3 (MIRP3, or MINK-related peptide 3 protein), alias KCNE4, and of the protein products of KCNE4 in human Alzheimer's disease brain samples", p. 3. Protein KCNE4 is described as being expressed in heart, skeletal muscle and kidney, p. 4 and is highly homologous to KCNE4 proteins from other species, *Id.* At p. 10, it is stated that, "[t]o date, no experiments have been described that demonstrate a relationship between the dysregulation of KCNE4 gene expression and the pathology of neurodegenerative diseases, in particular AD. Likewise, no mutations in the KCNE4 gene have been described to be associated with said diseases". The specification fails to disclose biological role of the instant KCNE4 or its role in Alzheimer's disease or any other neurodegenerative disease "or related diseases or disorders".

In the absence of knowledge of the biological significance of this specific KCNE4 protein, its involvement in neurodegenerative diseases or relevance to pathology, there is no immediately obvious patentable use for the method of screening for modulators of its activity or level of expression. According to the specification of the instant patent application, the brain tissues from patients with Alzheimer's disease had a different ratio of the KCNE4 distribution in certain areas of the brain as compared to normal control (see pp. 33-41 and Fig. 2, 3, 11 and 12). However, there is no explanation as how these data correlate with assertion of a specific role of the KCNE4 in neurodegenerative and "related" diseases so that an assay that measures difference

in activity or level of expression of KCNE4 could be useful for identification of potential pharmaceutical compounds.

The instant specification fails to provide any evidence or sound scientific reasoning that would support a conclusion that the instant KCNE4 protein is associated with any disease or disorder. To employ the KCNE4 protein or its encoding polynucleotide in the future methods of screening for potential drugs to treat, prevent or ameliorate neurodegenerative or related diseases is not a "real world" because it would eventually relate to a protein for which no biological function associated even with one of these diseases or disorders, including Alzheimer's disease, is known. Because the instant specification does not teach a biological activity of the protein, which supports a practical utility, one would not reasonably believe that a compound which changes (modulates) the activity or level of expression of the KCNE4 protein, would have any effect related to prevention or treatment of a condition or disease, like neurodegenerative disease or Alzheimer's disease, as implied by the specification. To employ the KCNE4 protein or KCNE4 nucleic acid of the instant invention in the claimed method of screening for their modulators would clearly be using it as the object of further research, which has been determined by the courts to be a utility, which, alone, does not support patentability.

The instant situation is directly analogous to that which was addressed in *Brenner v. Manson*, 148 U.S.P.Q. 689 (Sus. Ct, 1966), in which the court expressed the opinion that to be useful and meet the requirement of 35 U.S.C. § 101, an invention must have either an immediate obvious or fully disclosed "real world" utility. The court held that:

> "The basic quid pro quo contemplated by the Constitution and the Congress for granting a patent monopoly is the benefit derived by the public from an invention with substantial utility", "[u]nless and until a process is refined and developed to this point-where specific benefit exists in currently available form-there is

> insufficient justification for permitting an applicant to engross what may prove to be a broad field", and "a patent is not a hunting license", "[i]t is not a reward for the search, but compensation for its successful conclusion".

In the instant case, since the instant specification does not disclose a credible "real world" use for the method of modulating KCNE4 in their currently available form, then the claimed invention is incomplete and, therefore, does not meet the requirements of 35 U.S.C. § 101 as being useful.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. Claims 7, 8, 17 and 18 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

15. Claims 7, 8, 17 and 18 are further rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 7, 8, 17 and 18 encompass fragments, derivatives and variants of KCNE4 protein. The claims do not require that the recited molecular embodiments possess any particular conserved structure or other disclosed distinguishing feature. Thus, the claims are drawn to a

genus of polypeptides that is defined only by sequence identity. However, the instant specification fails to describe the entire genus of proteins, which are encompassed by these claims. In making a determination of whether the application complies with the written description requirement of 35 U.S.C. 112, first paragraph, it is necessary to understand what Applicant has possession of and what Applicant is claiming. From the specification, it is clear that Applicant has possession of a nucleic acid molecule which encodes a protein which has the amino acid sequence of SEQ ID NO: 1. The claims, however, encompass proteins that are fragments, derivatives and variants of the protein of SEQ ID NO: 1. Thus, the claims are not limited to a protein with a specific amino acid sequence. The claims only require the encompassed polypeptide molecules to share some degree of structural similarity to the isolated protein of SEQ ID NO: 1. The specification only describes a protein having the amino acid sequence of SEQ ID NO: 1 and fails to teach or describe any other protein which lacks the amino acid sequence of SEQ ID NO: 1 and has the activities possessed by the isolated protein KCNE4.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claims is a reference to structure in the form of a recitation of partial structural similarity, "fragment", or vague structural resemblance, "derivative or variant". There is not even identification of any particular portion of the structure that must be conserved. As stated above, it is not even clear what region of the encoded polypeptide has the activity clearly associated with

KCNE4. The specification does not provide a complete structure of those polypeptides that are fragments, derivatives and variants of KCNE4 and fails to provide a representative number of species for the encompassed genus. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the recited genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only isolated polypeptides comprising the amino acid sequence set forth in SEQ ID NO: 1, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Conclusion

16. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga N. Chernyshev whose telephone number is (571) 272-0870. The examiner can normally be reached on 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey J. Stucker can be reached on (571) 272-0911. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Olga N. Chernyshev, Ph.D.
January 08, 2009

/Olga N. Chernyshev/
Primary Examiner, Art Unit 1649